2011 Ohio State Championship "Body Forward" Projects

Team: 16 The Incredibots

Project Title: "The Incredibots Have Insight!"

Description: Approximately 20 million people in the U.S. suffer from partial vision loss such as peripheral vision loss. We developed a solution for this problem called "PUPS" (Personal Ultrasonic Peripheral System). PUPS allows people with peripheral vision loss, or even normal sighted people, to be aware of events that occur outside their limited range of vision. Worn on the upper arm, PUPS uses ultrasonic waves to detect people or obstacles on either side of the user and translates the signals into vibrations that tell the location, speed and distance of the object that is out of their field of vision.

Team: 101 Team BRICKS

Project Title: "The Stabilizer 3000 and BRICKS Harness"

Description: Some patients lack fine motor control of hands and feet. We designed special wall hooks ("Stabilizer 3000") to give patients who can't use grab bars extra support in bathrooms. Traditional harnesses for patient lift systems just move patients; they don't let them work at counters. We designed the BRICKS Harness (BRICKS Restoring Independence at Counters and Kitchens System). Used with patient lift systems, this easy-fasten harness supports the patient close enough to counters to do work and lets the patient be lifted up to reach things in cabinets.

Team: 463 The Metal Chihuahuas

Project Title: "Complex Regional Pain Syndrome/CRPS: Play Away the Pain"

Description: 50,000 Americans are diagnosed with CRPS annually. CRPS is when the Peripheral Nervous System goes haywire after an injury heals. Patients don't want to do their physical therapy exercises. Our solution is a therapeutic video game called Play Away the Pain. Using a desensitization brush the patient brushes the affected area according to movement on the video screen. A stepboard for weight-bearing exercises measures how many times and how much force the patient does the exercises. Game is web-based, allowing the therapist to set and monitor goals for the patient. The patient earns points to advance to higher levels.

Team: 464 LEGO Busters

Project Title: "Eye to Eye Manual Wheelchairs: Helping the Disabled to Join the World at Eye Level"

Description: People, who are in a wheelchair, either permanently or temporarily, are stuck viewing the world from chair height, seeing mostly butts and bellies, especially in a crowd. A manual, elevated wheelchair was our solution. We used existing technologies to lift and propel the chair with minimal effort and cost. Using this chair not only makes communication easier, it helps increase self esteem. We also found that employers, especially manufacturers, could save thousands as they would not need to redesign the chair bound persons workstation, as that person would be raised to fit the current workstation.

Team: 477 Brick Warriors

Project Title: "Navigating Sight Loss"

Description: Our presentation consists of an "FLL Jeopardy" Game in which we look at blindness, including causes, current solutions, experts working on the problem of blindness, and problems blind people face. With our host "Al Beback", and our contestants you will surely be entertained. You will learn about our solution: the iSEE (intelligent Sight Enhancement Equipment), a thin pin-bed that attaches to the back of an iPhone. Using sensors attached to a pair of sunglasses, it creates a 3-D image of the user's surroundings which can be felt with the hand.

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Team: 533 Wright-Patt Team

Project Title: "Prosthetic Fit"

Description: While we sleep, our bodies naturally swell as fluid disperses throughout the body and forms pools. This swelling can cause amputees difficulty getting their rigid prosthetic over their residual limb in the morning. Often they must wait almost an hour for the swelling to go down. Our solution uses an automated machine similar to a blood pressure cuff to put repeated pressure on the residual limb and stimulate blood circulation. This increased circulation carries fluid out of the limb, decreases swelling and allows the prosthetic to fit within five minutes!

Team: 687 Holy Bricks

Project Title: "FUN, Fitness in Unison with Nutrition"

Description: Because Ohio ranks 10th in America in terms of obesity, the Holy Bricks' project focused on childhood obesity. Their solution, FUN (Fitness in Unison with Nutrition) is a volunteer organization that travels to schools teaching nutrition, exercise, and healthy choices. FUN has been piloted with an elementary class with positive results. The Holy Bricks are confident that this FUN idea will raise awareness of this threat that's overtaking our nation's youth and become part of an effective solution. We hope all who hear our presentation will help promote our idea that FUN is not difficult and is easy to implement.

Team: 705 Lego-Jacks

Project Title: Toothtastic: From Cavity to Cure

Description: In our project, we investigated the problem of cavities. We surveyed students and found that many have had fillings. Our first idea was to create a mouthwash with Teflon to coat teeth and to create a barrier against cavities. After talking with a biomedical engineer, we changed our idea because Teflon might be dangerous to our stomach, its melting point is at a high temperature, and it wouldn't stick to teeth. Our new solution is to make a chewable mixture of wax to stick to our teeth filled with white cranberry juice to help prevent tooth decay. It's body improved!

Team: 938 The MemBRAINS

Project Title: "The KDS 2.O, Kidney Disease Screening Machine"

Description: One out of nine adults has chronic kidney disease, and millions of others are at risk because kidney disease usually has no symptoms. Early detection can decrease the risk of progression to kidney failure, but current screening methods are time-consuming, costly, and painful, so people don't want to be tested. Thus screening for kidney disease should be accessible and non-invasive. The medical device we designed, the KDS 2.0, screens for kidney disease in moments, by using hyperspectral imaging to test creatinine levels in the eyelid and a breathalyzer to determine the amount of urea in the breath.

Team: 961 Team R.E.D. Radical Engineering Development

Project Title: "Falls in the Elderly"

Description: Come see our working prototype solution! Our problem? Decreased balance causes falls in the elderly, resulting in physical, mental, and social injury. Each year 1:3 adults age 65 and up fall. Nearly 47,000 people go to the emergency room from falls involving canes and walkers. Our solution? The Super Walker! This technologically advanced walker is equipped with pressure sensors on each handle, so it can monitor balance by sensing differential pressure, alerting the user if the difference is too high. So in addition to helping avoid a fall, the user may also learn from the walker's feedback to improve their balance over time.

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Team: 1348 RoBotkins

Project Title: "Medi-Gum"

Description: Solve the battle of forcing children to take medicine they spit out, throw up, or lock their lips in refusing to take! With our delicious layered gum, the medicine is hidden. In conjunction with Trident and Children's Aspirin we have created Medi-Gum. Children receive a special treat of gum and begin to feel better. Parents are happy because the gum relieves fever, headaches, and body aches while eliminating the battle of taking medicine. It is also available in a child proof container.

Team: 1856 M & Ms, Mechanical Minds

Project Title: "Chip in My Body for Type 2 Diabetes"

Description: Our research project, based upon detecting insulin for Type 2 Diabetes was inspired by many other commercialized solutions for this growing problem, our team thoroughly researched ways to detect insulin levels, ultimately creating our insulin detecting chip, CIMB. After weeks of strenuous discussions, we compromised on the overall function of our product; CIMB would be inserted into the upper arm after a one-time surgical procedure. Consisting of a nano-tube, detecting the interstitial fluids of the body, magnetic, chargeable batteries, and a communicator device which sends data to the hand-held monitor, CIMB is an amazing, innovative solution for Type 2 Diabetes.

Team: 2136 Mechanical Faces

Project Title: "The Amazing Hand"

Description: We researched Mechanical Prosthetic Hands. We chose to address the aesthetic covering (usually made of silicone) of the mechanical hand, which is not considered waterproof because it can tear easily. A cut in the covering could allow water to penetrate and damage the mechanical components. Scientists have been studying self-healing agents to be used in a variety of applications and our solution is to create self-healing silicone. This would work by adding a layer of monomer microcapsules into the covering that would burst in response to a cut or tear. The released monomers would react with the monomers and catalysts around it, filling and repairing the tear with new polymer.

Team: 2138 Moderately Confused

Project Title: "VISUAL(EYE)S: Bionic Eye Project"

Description: The Moderately Confused team project will focus on bionic eyes. Although the bionic eye will only help individuals that were born with sight, our solution of a full bionic eye that replaces the entire orb can be used by any individual that is currently in need of a prosthetic eye or has retinal damage. A person using this eye will see in full color, infrared and night vision.

Team: 2275 Chap Bots

Project Title: "TGA, What is That?"

Description: TGA is the transposition of the great arteries, or the aortic and pulmonary arteries are switched. This congenital heart defect effects 6% of the babies born in the US.

The cause for this defect is unknown, so finding a cure is almost impossible. The team felt that the best solution is knowledge! By informing pregnant mothers of the symptoms of TGA, and getting immediate treatment, this defect can be surgically repaired and the baby has a chance for a normal life. The team created an informational brochure on TGA and it is distributed at a local pregnancy center. Knowledge is always the best solution!

Team: 2392 St. Hilary Team Casters

Project Title: "The Swiss Cheese Cast"

Description: The problem we identified was that casts are itchy, smelly and generally uncomfortable for the patient. Moisture accumulates under the cast and allows bacteria to grow. The "Swiss Cheese Cast" is like a regular cast, except it has holes in it to allow air to circulate naturally. It prevents the buildup of moisture which eliminates the problem of bacteria growth.

Team: 2539 Techno Brick Rats

Project Title: "Nanobots and Their Effect on Blood Clots"

Description: We researched blood clots and a possible solution of using nanobots to break them up. Our solution was a nanobot that navigates the blood stream and finds blood clots to break apart. It would use mini drills etc.

Team: 2688 LEGO Legend Crusaders

Project Title: "ORC, Oral Retainer Controller"

Description: Childhood Apraxia of speech is a neurological disorder that affects the motor skills that result in speech. Many therapies involve repetition of a word or sound to improve the brain to tongue connection. It takes 3,000 productions of a sound to create a muscle memory. Our solution replaces 4 digital action buttons on a video game controller with a combination of sound + correct lip/tongue position. It would work with already existing games, and the controller would not be permanently modified. This would increase practice time, and the more practice time the quicker the improvement in speech. Pat. Pending.

Team: 2867 HB Blazerbots

Project Title: "HB Blazerbots Engineer an Esophageal Pacemaker to Treat Achalasia"

Description: Achalasia is a problem with the nervous system in which the muscles of the esophagus and lower esophageal sphincter ("LES") do not work properly. When a patient suffers from Achalasia, the LES does not open causing food to back up into the esophagus causing chest pain, reflux and changes in the esophagus wall. We developed and designed an Esophageal Pacemaker ("E.P.") to stimulate the esophagus, permitting swallowing. The E.P. has a fish line stimulator stitched to one side of the esophagus with electrode nodes that send stimulation down the esophagus. The fish line ends in a ring which has been placed around the sphincter to stimulate opening and closing. This permits a patient to swallow, empty food into the stomach and then closes the sphincter eliminating reflux.

Team: 2869 HB Computer Chip Cookies

Project Title: "Diabetic Retinopathy"

Description: We chose diabetic retinopathy after a retina specialist talked to us about problems with the retina. In researching this problem, we learned that blood vessels leak in the eye and can cloud a person's vision and even cause severe loss of vision. There a few ways to treat diabetic retinopathy but nothing that cures it. Currently the most effective treatment is laser eye surgery. We designed a contact lens the patient wears at night, which includes a medication with a tyrosine kinase inhibitor to block growth factors from making the damaging blood vessels.

Team: 3106 Generation Nerd

Project Title: "Targeted Chemotherapy Using Nanobots"

Description: The standard treatment of chemotherapy and radiation can do as much damage to the patient as they do to the tumors. In order to lessen patient trauma, we propose a solution that involves micro and nano-technology. This solution utilizes miniscule robots and biodegradable synthetic particles introduced into the bloodstream and directed

in various ways to a tumor. The synthetic particles, or polymers, which carry chemotherapy, drift through the bloodstream and attach to certain proteins largely found in tumor cells. In this way the chemotherapy targets the cancer cells without harming healthy cells.

Team: 3334 Robotic Eagles

Project Title: "Epilepsy and Data"

Description: Our team researched epilepsy and ways to help control the seizures. One problem we wanted to solve was the amount of time it takes to get the data from the patient to the doctors who are miles away from the patient. The patient has to download information into a computer and then he takes it to the Cleveland Clinic. Our team came up with a solution of putting phone cells into the Neuropace that is embedded in the brain, so the information can be "texted" to the doctor instead of having to drive all that way.

Team: 3368 Psyclones

Project Title: "Sound Localization Device for Cochlear Implant Wearers"

Description: For our project, we studied the biomedical device cochlear implants. We interviewed a cochlear implant surgeon and a biomedical engineer and learned that cochlear implant wearers have a problem with localizing sound. We made a robot prototype to find where sounds are coming from and then used this idea for a solution. Our solution is a belt with sound sensors that will vibrate in the direction of the sound to tell the cochlear implant wearer where the sound originated. We also surveyed 22 local cochlear implant wearers.

Team: 3594 The Rolling Bones

Project Title: "Robotic Surgery"

Description: Our team traveled to Miami Valley Hospital, where we learned all about the pros and cons related to robotic surgery. Our project focused on finding a solution for the lack of tactile feedback. Our solution involved sensory substitution which substitutes visual and audio displays in place of the sense of touch. We propose that pressure sensors be placed on the instruments and then transmit that information to a color-coded display showing the amount of pressure currently being applied. Studies show that sensory substitution can benefit the surgeon while suturing. This decreases the length of the surgery, improves recovery time, and keeps the patient safe.

Team: 3653 Spazbots

Project Title: "Helping Girls Who Play Sports: An Idea to Improve ACL Surgeries"

Description: We learned that girls who play sports are especially vulnerable to ACL injuries. We researched existing ACL replacement surgeries and found out why using artificial ligaments for ACL repairs has gone out of favor due to factors such as creep loading. We proposed a possible solution for the problem of creep loading in artificial ligaments: using smart materials that can correct their shape over time with the application of electricity.

Team: 3986 Lego Lasernauts

Project Title: "Incredible Communications Device"

Description: This year, the Lego Lasernauts are dealing with a rare genetic disorder called Kennedy's disease. It is a debilitating disease that affects the lower motor nerurons which means the body slowly deteriorates and eventually the ability to speak is gone. We made the I.C.D. (Incredible Communications Device), which is a large keyboard that can speak entire sentences. It is built for patients who cannot speak any more. In future models it could communicate with any cellphone or

pager, and transmit live data from the life support systems.

Team: 4098 Pirates of the Lego Storm

Project Title: "Pirates Develop New Driving Aid for People with Neuropathy"

Description: The Ministry of Silly Walks has learned of a driving aid proposed by the Pirates of the Lego Storm to help people with peripheral neuropathy. The main symptom of peripheral neuropathy is numbness in the affected part of the body, most commonly the legs, feet, and hands.

Because of numbness in the feet, the person cannot feel themselves putting pressure on the pedals of a car making it dangerous for them to drive. The Pirates created a sock with a pressure sensor. When the sensor is pressed, it activates a buzzer placed on the leg which will help the person "feel" the pressure they are putting on the pedals.

Team: 4109 PowerStackers

Project Title: "Hi-Definition Eyes (HDE)"

Description: Our project is based on a very rare eye disorder called Achromatopsia. The patient has no cone cells in the retina, and is very sensitive to light. This genetic disorder causes day-blindness and color-blindness to the patient and has no cure. Current bionic eye research uses microchip to produce very low-resolution image. Our solution is ***High-Definition Eyes*** (HDE), using nanotechnology to produce ***Nano-Cones***. Because of the unique characteristics of carbon nanotube, each nano-cone functions as cone cell to produce optic signals. Nano-cone is 500 times smaller than a cone cell and can produce a much higher resolution image than a normal eye. With further research, our innovative solution could cure retinal-related disorders.

Team: 4628 Bionic Barracudas

Project Title: "Cerebral Palsy"

Description: Our project this year is on the brain, and more specifically Cerebral Palsy. People with conditions that impair arm movements, such as Cerebral Palsy, have trouble using their toothbrushes, giving them poor dental hygiene. We came up with a toothbrush that is bend-able, has 360 degrees of bristles around its head, and uses sonic technology. This enables people with poor motor skills to improve their self-confidence, dental hygiene, and independence.

Team: 4712 Rockin' Robots

Project Title: "Osteogenesis Imperfecta"

Description: Osteogenesis Imperfecta is a genetic disorder that causes brittle bones - which can cause false accusations of child abuse and disrupt families. Our proposed solution includes a questionnaire for emergency room personnel that is intended to reduce the possibility that cases of OI will be mistaken for child abuse.

Team: 4815 Brick Warriors

Project Title: "Stem Cell Wrap"

Description: We discovered that about 24,000 Americans suffer from a 3rd degree burn each year. We spoke to Dr. Beisler (HMS Permidion) and Dr. Miller (OSU burn center). We discovered that adult stem cells can be used to regrow organs. Knowing that people are suffering made us want to find a solution. Our team designed the Stem Cell Wrap (SCW). We started by extracting stem cells from the patient's own hair follicles. We put the stem cells into a liquid, containing proteins, collagen and glucose. The solution is pumped onto the burned area, which is regulated by a pump.

Team: 5163 Body Builders

Project Title: "Operation: Neutralize Nicotine: Developing Babies Harmed by Nicotine"

Description: We researched the problem of developing babies who are affected by nicotine being received from their smoking mother. Our solution is a miniature gun that neutralizes nicotine. It is placed in the pregnant smoking mother's trachea through an inhaler. The miniature gun sticks to the trachea and neutralizes the nicotine as it passes.

Team: 5305 Bovine Warriorz

Project Title: "Dakota's Dream: A Cure for Tay-Sachs Disease"

Description: Our first volunteer project this year was to collect donations for Dakota's Dream, a fundraiser on behalf of Dakota Bihn, a girl in our community who has Tay-Sachs Disease. We were so moved by Dakota's story that we decided to do our research project on Tay-Sachs. TSD is a disorder in which the brain doesn't produce enough hexosimanidase A, an enzyme which breaks down gangliosides and eliminates them from the cell. The buildup of waste products in the brain cells results in progressively debilitating neurological symptoms. Our solution involves the use of a nanoparticle chaperone that can transport the hexA gene across the blood-brain barrier.

http://www.curetay-sachs.org/dream.shtml

Team: 5414 LCCS Thunderbots

Project Title: "Food Allergies – Avoidance and Awareness"

Description: Food allergies are an adverse immune response to a food protein which the body sees as harmful. Reactions range from stomach upset to anaphylaxis. There has been an 18% increase of children diagnosed with food allergies in the past decade, and organizations like AAFA and FAAN identify labeling as a major issue affected families have in avoidance and awareness. The Thunderbots' designed symbols of eight major allergens for the front of food packaging, presented these to concerned organizations, a nationally recognized food manufacturer, and held an Awareness Week at school, modifying the lunch menu.

Team: 5560 Maybe He's Taking a Shower

Project Title: "Concussion Prevention"

Description: The problem we chose to address was concussions. We developed a multi sport helmet so that people wouldn't need to buy so many different helmets and therefore would be more inclined to wear one. We did an experiment to determine the best cushioning material for our helmet by dropping pumpkins. We used the internet, books, magazines, radio and a webinar to learn more, and then visited Dr. Bir at the Biomedical Engineering Department at Wayne State University to see how they test helmets.

Team: 5591 Team Logic

Project Title: "The 'Grow with Ya' Heart"

Description: We looked at the problem of not enough donor hearts to meet the organ donation need. Our solution was an artificial heart to be made of an Aluminum Oxide/Chitosan Polymer able to expand. The walls and valves to contain embedded spring-loaded dental expander technology; springs themselves embedded in a heat sensitive polymer. During a simple office visit, the doctor controls the "Growth" of the heart by using electromechanical sources of energy to soften the polymer surrounding the springs in a controlled fashion.

Team: 5772 The IncrediBATs

Project Title: "JOLEEN MEETS TEENS: The IncrediBATs Make Hearing Protection Ear-Resistable"

Description: One in five teens has noise-induced hearing loss. Many teens don't know or don't care that they are at risk. Our solution is to get information about safe listening where it is needed on kids' iPods, and to make it cool to wear hearing protection. The IncrediBATs made a Hearing Survival Guide and iPod stickers and distributed these to teens and college students. They built Jolene, a mannequin equipped with a microphone and a decibel meter, and used Jolene to test students' iPods. The IncrediBATs also created Ear-Art, designer earplugs that make hearing protection cool.

Team: 5816 Loveland LEGO Legends

Project Title: "The Legendary: The most recent advancement in the care of insulin dependent diabetes"

Description: Maintaining excellent glucose control is crucial to the good health and future well-being of people with diabetes. Glucose control is a daily concern for people with diabetes; insulin must be in balance with food and physical activity. It sounds easy, but it isn't. The Legendary is a combined continuous glucose monitor (CGM) and insulin pump. The CGM and pump communicate with each other and provide the right amount of insulin at the right time. The Loveland LEGO Legends used surveys to find what improvements in current care diabetics and their caregivers want and created the Legendary to fill those needs.

Team: 5934 Monster Maniax

Project Title: "CNS Relapse in Acute Lymphocytic Leukemia"

Description: Acute lymphocytic leukemia is a cancer of the immune system. Cancer cells in the brain may not be adequately treated by chemotherapy due to the blood brain barrier. These cancer cells cause a relapse of leukemia. Current option is direct injection of chemotherapy into the spinal canal. This is a painful procedure. Our solution is to use pills containing nanoparticles filled with chemotherapy. These nanobots cross the blood brain barrier, recognize cancer cells using receptors and locally release chemotherapy killing only cancer cells. This treats CNS leukemia and prevents relapses. Our treatment is less painful and more specific.

Team: 7154 Unibots

Project Title: NIR-PoM: A Bright Future for the Field of Mammography

Description: The Unibots invite you to come discover the innovations of biomedical engineering with us! We'll discuss near-infrared light and the possibility of using it as a safe, painless substitute for mammography! This also promises great improvements in preventing breast cancer for generations to come. We have also invented a hypothetical new machine, dubbed the 'NIR-PoM', which stands for 'Near InfraRed Portable Mammogram'. Eventually, one could be able to take a pill and the NIR-PoM detects the nanoparticles from the pill that have clustered around the tumor.

Team: 7202 Bony Bunch

Project Title: "PTG, Physical Therapy Game"

Description: When we discovered one of our team members has a medical condition called Osteogenesis Imperfecta, a brittle bone disease, we wanted to do something to help. We ended up shifting our research topic, however, when they told us how much they disliked going to physical therapy (PT). After talking with other PT patients, we learned that he is not alone. So, we came up with an idea to make physical therapy fun, something you could do at home, and that would record and send results to your therapist. We have a provisional patent on a product we developed and hope to produce our idea and make it a reality.

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Team: 7268 Burneson Robotics

Project Title: "Prosthetic Limbs"

Description: The students expressed an interest in finding out if prosthetic limbs could be controlled by the mind. After thoroughly researching their idea, including visits with experts in the field, they found that their idea is not possible at this time. Although they were unable to create a mind control prosthetic device they did create a prosthetic arm. They also have a simulation of mind control through a game that they obtained.

Team: 7428 Tie-Dyed Spies

Project Title: "Portable Hearing Emergency Assistive Device (P.H.E.A.D.)"

Description: After spying a need of the hearing impaired, the Tie-Dyed Spies got to work in their secret lab. The inability to perceive emergency alarms while sleeping and not wearing their assistive devices, was a common frustration of those interviewed. This is especially troubling when staying in unfamiliar accommodations, like hotels. Enter the latest spy gadget, the Portable Hearing Emergency Assistive Device (or P.H.E.A.D.). It translates many normal emergency signals and indications and turns them into a multi-sensory alert for the hearing impaired sleeper.

Team: 8002 DENISON TECHNO TEAM

Project Title: Preventing Colds and Flu in Winter Months

Description: We taught 1031 students how to protect themselves from getting the flu and cold, and it has been decreasing.

After designing a website doing the first online survey, putting up posters, doing very funny presentations, and a second online survey, 3rd, 4th, 5th, 6th, 7th and 8th grades in all Horizon Science Academy Schools know everything about the flu and cold. They are getting sick less, and coming to school more.

Team: 8200 Robo Radar

Project Title: "Uber Dermis"

Description: The team identified skin cancer as the problem that they wanted to address. They developed their idea for a skin cancer vaccine, then found and communicated with companies pursuing similar solutions. They tried even to improve on the existing solutions by providing lifetime protection.

The team has "developed" a skin cancer vaccine called Uber Dermis that uses scheduled injections of MSH or Melanocyte Stimulating Hormones at infancy and at age 18 to stimulate melanogenesis or the creation of melanin in the body to provide a lifetime of photo-protection from the harmful rays of the sun thereby preventing damage from the sun and reducing sun related skin cancer.

Team: 8703 The Ascension Knights

Project Title: "The Foodinator"

Description: We all know that eating "fatty foods" can be bad for our heart, but how do we know what we are really putting into our body? Try "The Foodinator" smartphone app, the easy way to a heart healthy diet. All you do is scan a food item's barcode, using the camera on your smartphone, and the Foodinator does the rest. Using the American Heart Association recommendations for limiting calories from fat and cholesterol, the Foodinator displays an easy to read red display for "food to avoid" or green display for "food safe to eat".

Team: 8957 Tremendous Tigers

Project Title: "Family Feud Acne Action"

Description: The Tremendous Tigers decided to research a skin function called acne. We chose to do a game show, "Family Feud Acne Action." To try out our skit, we presented it in front of the 6th, 7th, and 8th grades during an assembly, and practiced it during class time. Our solution was to develop a new cream to

help combat acne. We used all natural ingredients and found it was quite tasty. Many of the members used the cream over a weekend. We had a lot of fun learning about a topic that we can relate to.

Team: 9744 Lordstown Bot Kickers

Project Title: "Ask Us About Your Pancreas"

Description: Did you know that 23.6 million Americans are currently suffering from diabetes? The Lordstown Bot Kickers are striving for a solution to this worldwide epidemic. With the help of the newly-FDA approved patch pen, we have developed an innovative solution for diabetes sufferers. The patch pen is a small patch that is attached to your lower stomach and delivers mealtime doses, or bolus doses. We created a dial that aids in the delivery of basal doses, or small doses taken throughout the day. Hopefully, our improvement to the patch pen will make the lives of diabetes sufferers a bit less painful.

Team: 10231 The NUTS!

Project Title: "Internal Skeletal Support System (IS^3)"

Description: The problem that we tackled involves the healing of broken bones. Traditionally, an external cast is applied to immobilize the surrounding joints, allowing the bone to heal properly, but also increasing the risk of osteoarthritis. Our solution, the Internal Skeletal Support System, is a substance comprised of three components. The healing component consists of calcium, magnesium, and other essential minerals for bone repair. The adhesive component, based upon the Sandcastle worm glue, binds the fracture together, acting as an internal cast. The lattice component provides structural support for the bone to heal faster. This substance is biocompatible, biodegradable, and injectable.